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| 10/757,265 | 01/14/2004 | B. Ryland Wiggs | N1076 | 4898 |
| 23456 7590 06/18/2008 WADDEY & PATTERSON, P.C. 1600 DIVISION STREET, SUITE 500 NASHVILLE, TN 37203 | | | | |
| EXAMINER | | | | |
| ALL MOHAMMAD M | | | | |
| ART UNIT | | PAPER NUMBER | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/757,265

Applicant(s)

WIGGS, B. RYLAND

Examiner

MOHAMMAD M. ALI

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 63-90 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 85-88 is/are allowed.
- 6) ☒ Claim(s) 63, 64, 66, 68-70, 72, 74, 75, 77, 79-81, 83, 89 and 90 is/are rejected.
- 7) ☒ Claim(s) 65, 67, 71, 73, 76, 78, 82 and 84 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Final Drawing Review (PTO-848)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 63, 74, 89 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggs et al., (5,671,608) in view of Aoyagi et al., (6,390,183). Wiggs et al., disclose a direct expansion geothermal heat pump except R410A refrigerant. See Abstract. Aoyagi et al., teach the use of R410 refrigerant in a heat exchanger for the purpose of enhancing heat transfer coefficient and to protect ozone layer. See column 6, lines 46-61, column 7, lines 29-45 and column 16, lines 15-39. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the direct expansion geothermal heat pump of Wiggs et al., in view of Aoyagi et al., such that R410 refrigerant could be provided in order to run a direct expansion heat pump system. Claims 68 and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable between 50 psi and 180 psi could be provided in order to run a

direct expansion heat pump system.

Claims 64 and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggs et al., (5,671,608) in view of Aoyagi et al., (6,390,183) as applied to claim 63 above and further in view of Suzuki et al., (6,840,058). Wiggs et al., in view of Aoyagi et al., disclose the invention substantially as claimed as stated above. However, Wiggs et al., in view of Aoyagi et al., do not disclose polyolester oils. Suzuki et al., teach the use of polyolester oil as lubricating oil in carbon dioxide refrigerant system for the purpose of running of the refrigerant control system with a compatible lubricant oil with the carbon dioxide refrigerant. See column 11, lines 14-28. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the direct expansion geothermal heat pump of Wiggs et al., in view of Aoyagi et al., and further in view of Suzuki et al., such that polyolester oil could be provided in order to run a direct expansion heat pump system with carbon dioxide refrigerant.

Claims 69 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggs et al., (5,671,608) in view of Brasz et al., (6,892,522) as applied to claims 68 and 79 above and further in view of Aoyagi et al. Wiggs et al., in view of Brasz et al., disclose the invention substantially as claimed as stated above. However, Wiggs et al., in view of Brasz et al., do not disclose R410 refrigerant. Aoyagi et al., teach the use of R410 refrigerant in a refrigerant heat exchanging cycle for the purpose of enhancing heat transfer coefficient and to protect ozone layer by using high pressure HFC

Art Unit: 3744

refrigerant. See column 6, lines 8-36. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the direct expansion geothermal heat pump of Wiggs et al., in view of Brasz et al., and further in view of Aoyagi et al., such that R410 refrigerant could be provided in order to run a direct expansion heat pump system.

Claims 70 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggs et al., (5,671,608) in view of Brasz et al., as applied to claim 68 and 79 above and further in view of Suzuki et al. Wiggs et al., in view of Brasz et al., disclose the invention substantially as claimed as stated above. However, Wiggs et al., in view of Brasz et al., do not disclose polyolester oils. Suzuki et al., teach the use of polyolester oil as lubricating oil in a climate control system for the purpose of running of the climate control system. See column 11, lines 14-28. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the direct expansion geothermal heat pump of Wiggs et al., in view of Brasz et al., and further in view of Suzuki et al., such that polyolester oil could be provided in order to run a direct expansion heat pump system with carbon dioxide refrigerant.

Allowable Subject Matter

Claims 86-88 are allowed.

Claims 65, 67, 71, 73, 76, 78, 82 and 84 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 05/27/08 have been fully considered but they are not persuasive. The Applicant argued that the proposed combination of Wiggs and Aoyagi fails to disclose or suggest a direct expansion geothermal heat exchange system having a below surface heat exchanger or heat exchange tubing and an R-410 refrigerant. The secondary reference to Aoyagi fail to disclose or suggest of R-410A refrigerant in a direct expansion system, and therefore the proposed combination of Wiggs and Aoyagi fails to disclose or suggest the subject matter specified in independent claims 63, 74, 89 and 90. The Examiner disagrees. Both Wiggs and Aoyagi teach the direct expansion heat exchange system. The Applicant does not have any problem to accept Wiggs's heat exchanger as a direct expansion geothermal heat exchanger except the heat exchanger of Aoyagi. However, how Aoyagi disclose a direct expansion heat exchanger has been elaborately discussed in the previous replies. Wiggs teaches each and every element of the claimed invention except the type refrigerant which is being taught by Aoyagi being of the same direct heat exchanger system. This is nothing more than replacing the refrigerant of Wiggs by a substitute refrigerant R-410A whose application in the heat exchanger is known in the market. The general concept of using a heat exchanger by replacing a refrigerant by another known refrigerant fall within the real of

common knowledge as obvious mechanical expedient and this illustrated by Aoyagi which teaches the use of R-410A refrigerant in a direct expansion type heat exchanger. Therefore, the combined teachings of Wiggs and Aoyagi for having another heat exchanger are sufficient. In support of the above argument, the Applicant narrated lot more things which are not the claimed subject matter.

Applicant further argued that Aoyagi teaches away from the primary benefit of using R-410A in a direct expansion geothermal system, thereby further discouraging one ordinary skill from making the proposed combination. In response to applicant's argument that there is no suggestion or teaches away to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, there is teachings to combine the references and knowledge available to one of ordinary skill in the art as explained above.

The Applicant further argued that Aoyagi does not teach the use of R-410A refrigerant for overall higher operation system pressures in a DX system design, or in any system design that does not have a tube with the tubing of heat exchanger, whether finned or not. The Examiner again disagrees. It is well known that the working pressure of different types of refrigerant is different. The regular refrigerant like R-12 works at low

higher working pressure than CO₂ or R-410. When the refrigerant R-410A is in the market and working in Aoyagi reference an ordinary skill of art do knows it characteristics of working pressure and its use in the heat exchanger. Therefore, Aoyagi does not teach the use of R-410 refrigerant for higher operation system is not correct.

Therefore, the rejections are OK.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOHAMMAD M. ALI whose telephone number is (571)272-4806. The examiner can normally be reached on maxiflex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl J. Tyler can be reached on 571-272-4808. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mohammad M Ali/

Application/Control Number: 10/757,265

Page 8

Art Unit: 3744

Primary Examiner, Art Unit 3744